

Businesses (ARIB).

In the multicode transmission method disclosed in the specifications, as shown in Fig. 21, a plurality of data channels DPCH1, DPCH2, DPCH3 and DPCH4 (DPCH: Dedicated Physical CHannel) respectively using a plurality of spread codes (in this example, four codes: spread codes C1, C2, C3 and C4) are used for one call at the same time. In this case, packet data relating to one call is assigned to the respective data channels DPCH1 to DPCH4 in parallel in frame units. By this, it is possible to transmit the data at a speed plural times (in this example, four times) the case where packet data of one call is transmitted through one data channel.

Besides, in the multicode transmission system, control information including a pilot symbol for synchronization establishment, a TPC (Transmitter Power Control) symbol for the so-called closed loop transmission power, and a TFCI (Transport Format Combination Indicator) symbol for upper logical channel multiplexing is added to all the channels DPCH1 to DPCH4.

In this case, the control information is spread by the same spread code (in this example, spread code C1), and is shared by the respective data channels DPCH. That is, with respect to the respective channels DPCH1 to DPCH4, the same control information is transmitted through a common control channel. Accordingly, with respect to all the data channels

DPCH1 to DPCH4 relating to the multicode transmission, the transmission is made at the same timing.

By the way, as a technique for controlling transmission power (transmitting power), the so-called closed loop transmission power control is known. The closed loop transmission power control is a processing as follows: The ratio of reception power to interference power (SIR: Signal to Interference Ratio) is measured at a reception side, this measured SIR is compared with a reference value, and a transmission side is instructed to increase or decrease transmission power. In this case, an increase width and a decrease width are respectively set to predetermined constant values. On the other hand, the transmission side increases or decrease the transmission power by the constant value in accordance with the instruction to increase or decrease the transmission power.

Besides, as a technique for controlling transmission power, DTX control is also known. The DTX control is disclosed in, for example, the above specifications. In the DTX control, in the case where there is no packet data to be transmitted, a transmission operation is inhibited, and in the case where packet data to be transmitted is generated, the transmission operation is started.

As described above, in the multicode transmission, since a plurality of data channels are assigned to one call, there

is a fear that transmission power is increased. Then, it is conceivable to control the transmission power by applying the closed loop transmission power control and the DTX control to the multicode transmission.

However, in the multicode transmission sharing the control information as described above, the transmission relating to the plurality of data channels assigned to one call is started and stopped at the same timing. Accordingly, in the case where the DTX control is applied to the multicode transmission, the transmission power is abruptly increased or decreased. Thus, the closed loop transmission power control comes to be unable to follow. Therefore, there have been such problems that transmission quality between a mobile station relating to another user and a base station is deteriorated, and wasteful power consumption is produced between the mobile station relating to the other user and the base station.

More specifically, in the case where the transmission power is abruptly increased, the interference power to the other user is also abruptly increased. On the other hand, in the closed loop transmission power control, as described above, the transmission power can be increased only by the predetermined constant value. Accordingly, if the increase of the interference power to the other user is abrupt and is larger than the constant value, it takes a time for the mobile station relating to the other user and the base station to sufficiently